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ENVIROCARE OF UTAH, INC.

THE SAFE ALTERNATIVE

July 8, 2003 CD03-0297

U.S. Nuclear Regulatory Commission
ATTN: Susan M. Frant, Chief
Fuel Cycle Licensing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Materials Safety and Safeguards
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11545 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: Request for revision to Envirocare's current SNM Exemption Order

Dear Ms. Frant:

On January 14, 2003, The U.S. Nuclear Regulatory Commission (NRC) issued a Safety Evaluation Report (SER) regarding a revision to the exemption from the requirements of 10 CFR 70 that is held by Envirocare of Utah, Inc. (Envirocare). The January 14, 2003 SER addressed the issues that Envirocare had requested NRC review in its letters dated July 3, 2002 and July 29, 2002 to revise conditions of the Order issued by NRC that ensure the necessary conditions of the original SER were met. Initially, Envirocare determined that the revised Order would satisfy its long-term waste disposal objectives given the market analysis that was performed previous to the July 3, 2003 letter. However, a waste stream that was not considered in the market analysis prior to the July 3, 2002 letter was identified once Envirocare notified its customers of its new capability to manage liquids with SNM. The specific waste stream consists of approximately 150,000 gallons of depleted uranyl nitrate (DUN) liquid from Savannah River. This material consists of radionuclide concentrations that are below Class A Low-Level Radioactive Waste limits as prescribed in 10 CFR 61. The material is a byproduct of past nuclear material production and stabilization campaigns. Historically, the DUN was converted to the uranium trioxide for storage and future reuse. Historical data indicates that portions of this material have a pH less than two and, based on TCLP standards, mercury and chromium concentrations would exceed the RCRA limits for a hazardous waste. As will be discussed below, Envirocare is currently not able to competitively bid for this waste stream due to a stipulation in Condition 5 of the SER and the fact that the concentration limits in the Table in Condition 1 of the current SER are based on Class A Low-level Radioactive Waste limits instead of criticality-based analysis.

Envirocare has performed a comprehensive survey of the current market as well as another exemption from 10 CFR 70 licensing requirements that was issued by NRC to

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Waste Control Specialists, LLC (WCS). Envirocare has determined that the conditions of the exemption issued to WCS allow acceptance of waste streams that are generally characterized as liquids with higher SNM concentrations limits in solution comprised of sufficient volume to merit shipment in 4,000-gallon tankers while the conditions of the exemption issued to Envirocare do not. Therefore, Envirocare hereby requests revision to the SNM Exemption Order as outlined below.

Envirocare recognizes that revision to the Order will require modeling and analysis that has not yet been performed and that this additional research will take a period of months. However, Envirocare's short-term business objectives relevant to the DUN material described in the opening paragraph require that Envirocare have the ability to compete in a timelier manner. Therefore, Envirocare proposes to conform its operations to certain modeling parameters used to draft WCS' SER and solicit an approval letter per Condition 9 of Envirocare's SER to adopt the limits of WCS' SER for liquids with SNM in solution in lieu of the extended formal Order revision process.

Condition 9 states, "Envirocare shall obtain NRC approval prior to changing any activities associated with the above (referencing Conditions 1-8 in the SER) conditions." In accordance with this condition, Envirocare hereby requests to accept the DUN for treatment that comply with separate limits from those presented in the table of Condition 1 and further requests language of Condition 5 be modified. These new limits will be based on criticality risk that has been previously performed in generating WCS' SER for exemption to 10 CFR 70 requirements. Envirocare understands that the use of MgO was not considered during WCS' modeling. Therefore, in the interest of alacrity, Envirocare hereby commits not to use MgO during treatment of the specific waste streams referenced above. Envirocare determined that these waste streams would not be acceptable with the current Order because the Class A Low-Level Radioactive Waste limit basis is restrictive and Condition 5 of the SER states, "For containers of liquid waste with more than 600 kilograms of waste, the total activity (pCi) of SNM shall not exceed the SNM concentration in Condition 1 times 600 kilograms of waste." Analysis showed that high-volume shipments of liquids with SNM would be limited to small quantities of SNM and very low concentrations of SNM because high-volume shipments have a mass much greater than 600 kilograms. Envirocare requests the table exhibit new limits (based the WCS model) in units of grams of SNM per gram of waste material similar to the table in Condition 1 of the WCS exemption. Adoption of this request will necessitate revision of the language in Condition 5 quoted above because multiplying 600 kilograms by the applicable table 1 concentration will yield a mass of SNM instead of an activity. Envirocare will develop an Operating Work Permit (OWP) specific to management of the DUN material. The OWP will reference the Condition 9 approval letter from NRC and state that MgO is not an acceptable reagent for treatment.

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The remainder of the letter discusses proposed changes to the Order itself. The request includes the changes discussed above; modification of the table in Condition 1 from a Class A basis to a criticality basis, change in the units of the table, and a change in the language of Condition 5. However, the modification to the Order must also include revision of the table to include the addition plutonium modeling with MgO. Envirocare is under the impression that the result of NRC analysis will yield a table similar to the table for WCS with one limit for both liquid and solid wastes, although Envirocare's plutonium limits may be lower as a result of the MgO analysis. Once this analysis is complete, Envirocare would like the opportunity to provide input in drafting the new table should the newly calculated limits be below the current limits of the table. Envirocare may request to have separate columns in the table for solid and liquid wastes should the analysis result in more restrictive limits.

In addition, Envirocare requests to expand the table to include U-235 at any enrichment with unlimited quantities of MgO or beryllium, this concentration was previously established at 160 pCi/g and presented in the original SER and Order. During the last revision, this limit was removed in favor of a more broad (any pure form chemicals and any special moderators at any weight percentage with any enrichment U-235) but restrictive limit, Envirocare would like to segregate the MgO limit from the more restrictive limit (26 pCi/g) so that both criteria are shown in the table. Closely related to this item, Envirocare requests the NRC provide limits identical in parameters to the 26 pCi/g restriction except for plutonium isotopes in addition to U-235.

Another request in connection to the table is to increase the number of divisions in the modeling with respect to U-235 enrichment. Currently, the model reflects enrichment percentages of $<10\%$ or $\geq 10\%$. Envirocare requests additional limits to be calculated at 5%, 20%, and 50% at a minimum. Ideally, it would be most beneficial to establish a function that relates the gram per gram limit of U-235 to the enrichment percentage. This would provide Envirocare the best ability to serve the industry while maintaining a constant margin of criticality safety.

Envirocare also requests the following technologies be evaluated from a SNM perspective; Spray-Washing, Compaction, and Organic Destruction. Spray-Washing involves spraying surface-contaminated debris with pressurized water to remove hazardous contaminants. The water is then collected, treated if necessary, solidified, and disposed. Compaction is a mechanical process that will increase waste density from approximately 10 lbs/ft^3 to 20 lbs/ft^3. Organic Destruction is a technology that operates at temperatures below one hundred degrees Celsius and relies on chemical reactions to break the hydrocarbons. Envirocare is currently evaluating Solvent Electron Technology and Electronic-generated Oxidants. Solvent Electron Technology uses sodium to strip

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chlorine from hydrocarbons while an Electronic-generated Oxidants process uses cerium, silver, or similar elements to oxidize hydrocarbons.

Envirocare is currently at a competitive disadvantage with another waste disposal company with regard to liquids with SNM. Approval of the Condition 9 request levels the playing field in this regard, hence the time pressure. Therefore, Envirocare is flexible with regard to the specific scopes of the two items presented in this letter. Envirocare is extremely amenable to working with NRC to plan a strategy that allows Envirocare to compete for business and minimizes the burden on NRC. Envirocare will follow this letter up with communication initiated in an effort to achieve this aim.

Sincerely,

Tye Rogers
Corporate Radiation Safety Officer

cc: Region Administrator, NRC Region IV
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